

**Amendment under PCT Article 34**

**CLAIMS**

1) Claim 1 must be amended as attached sheet.

5

2) Claim 2 must be cancelled.

3) Claim 3 must be cancelled.

10 4) Claim 4 must be amended as attached sheet.

5) Claim 5 must be amended as attached sheet.

6) Claim 6 must be amended as attached sheet.

15

7) Claim 7 must be amended as attached sheet.

## CLAIMS

1. (Amended) A burner for treating a waste gas, characterized in that a flame stabilizing zone is open toward a combustion chamber, surrounded by a peripheral wall, 5 and closed by a plate remotely from said combustion chamber; said plate has, defined therein, an waste gas flame hole for ejecting the waste gas toward said flame stabilizing zone and an auxiliary combustible gas flame hole for ejecting the auxiliary combustible gas, and the peripheral wall of said flame stabilizing zone has an air ejection nozzle for ejecting air substantially circumferentially to produce a swirling flow; and a waste gas, an 10 auxiliary combustible agent, and air are introduced into and mixed with each other in said flame stabilizing zone, and the mixed gases are ejected toward said combustion chamber perpendicularly to said plate.

2. (Cancelled)

15

3. (Cancelled)

4. (Amended) A burner according to claim 1, characterized in that said waste gas flame hole has a diameter smaller than inside diameter of said flame stabilizing zone.

20

5. (Amended) A burner according to claim 1, characterized in that said waste gas flame hole and said auxiliary combustible gas flame hole are arranged in a substantially circumferential pattern substantially around the center of said flame stabilizing zone with said auxiliary combustible gas flame hole being disposed adjacent to said waste gas flame 25 hole.

6. (Amended) A burner according to claim 1, characterized in that a second auxiliary combustible gas flame hole for ejecting the auxiliary combustible gas is defined

in the peripheral wall of said flame stabilizing zone downstream of said air ejection nozzle in an axial direction of said flame stabilizing zone.

5        7. (Amended) A burner according to claim 1, characterized in that said air ejection nozzle comprises air ejection nozzles in a plurality of groups divided along axial direction of said flame stabilizing zone.

10        8. A burner according to claim 1, characterized in that said flame stabilizing zone is of a cylindrical shape.

15        9. A burner according to claim 8, characterized in that said flame stabilizing zone and said combustion chamber are of a cylindrical shape and have substantially same diameter.

20        10. A burner according to claim 1, characterized in that a second flame stabilizing zone is disposed downstream in the axial direction of said flame stabilizing zone, and has, defined in a peripheral wall thereof, a second auxiliary combustible gas flame hole for ejecting a second auxiliary combustible gas, and a combustion chamber is disposed downstream of said second auxiliary combustible gas flame hole in an axial direction of said second flame stabilizing zone.

25        11. A burner according to claim 10, characterized in that said air ejection nozzle comprises air ejection nozzles in a plurality of groups divided along axial direction of said first flame stabilizing zone.

12. A burner according to claim 10, characterized in that said second auxiliary combustible gas flame hole comprises second auxiliary combustible gas flame hole in a plurality of groups divided along axial direction of said second flame stabilizing zone.

13. A burner according to claim 10, characterized in that said first and second flame stabilizing zones and said combustion chambers are of a cylindrical shape and have substantially same diameter.

5

14. A burner according to claim 1, characterized in that a pipe or a hole for directly viewing combustion flames is disposed upstream of the combustion flames in said flame stabilizing zone or said combustion chamber, and a UV sensor is provided for detecting the combustion flames through said pipe or said hole.

10

15. A burner according to claim 1, characterized in that a mixer positioned outside of a supply unit for the auxiliary combustible agent, is provided for mixing an oxygen-containing gas from an oxygen-containing gas supply line and a fuel gas from a fuel gas supply line, and supplying the gases to said combustion chamber, in which the 15 supplied gases are combusted to produce combustion flames.

16. A burner according to claim 1, characterized in that a flow speed accelerating means is disposed in said waste gas chamber for increasing flow speed of a combustible waste gas to a level equal to or higher than combustion speed of the combustible waste 20 gas.

**Amendments to the claims:**

This listing of claims will replace all prior versions and listing, of claims in the application:

**Listing of Claims:**

Claims 1-4, 6-16 (canceled).

Claim 17 (new): A burner for treating a waste gas, comprising:

a flame stabilizing zone opened toward a combustion chamber, surrounded by a peripheral wall, and closed by a plate remotely from said combustion chamber;  
a waste gas flame hole disposed on said plate for ejecting the waste gas toward said flame stabilizing zone;

an auxiliary combustible gas flame hole disposed on said plate for ejecting the auxiliary combustible gas, and

an air ejection nozzle disposed on the peripheral wall of said flame stabilizing zone for ejecting air substantially circumferentially to produce a swirling flow;

wherein said waste gas, an auxiliary combustible gas, and air are introduced into and mixed with each other in said flame stabilizing zone, and the mixed gases are ejected toward said combustion chamber perpendicularly to said plate; and

wherein said waste gas flame hole and auxiliary combustible gas flame hole are arranged in a substantially circumferential pattern of an annular shape substantially around the center of said flame stabilizing zone.

Claim 18 (new): A burner according to claim 17, wherein said auxiliary combustible gas flame hole is disposed adjacent to said waste gas flame hole in said annular shape.

Claim 19 (new): A burner according to claim 17, wherein said annular shape is in same position with a free vortex region of said swirling flow.

Claim 20 (new): A burner according to claim 17, wherein said waste gas flame hole has a diameter smaller than inside diameter of said flame stabilizing zone.

Claim 21 (new): A burner according to claim 17, wherein a second auxiliary combustible gas flame hole for ejecting the auxiliary combustible gas is defined in the peripheral wall of said flame stabilizing zone downstream of said air ejection nozzle in an axial direction of said flame stabilizing zone.

Claim 22 (new): A burner according to claim 17, wherein said air ejection nozzle comprises air ejection nozzles in a plurality of groups divided along the axial direction of said flame stabilizing zone.

Claim 23 (new): A burner according to claim 17, wherein said flame stabilizing zone is of a cylindrical shape.

Claim 24 (new): A burner according to claim 17, wherein said flame stabilizing zone and said combustion chamber are of a cylindrical shape and have substantially same diameter.

Claim 25 (new): A burner according to claim 17, wherein a second flame stabilizing zone is disposed downstream in the axial direction of said flame stabilizing zone, and has, defined in a peripheral wall thereof; a second auxiliary combustible gas flame hole for ejecting a second auxiliary combustible gas, and a combustion chamber is disposed downstream of said second auxiliary combustible gas flame hole in an axial direction of said second flame stabilizing zone.

Claim 26 (new): A burner according to claim 25, wherein said air ejection nozzle comprises air ejection nozzles in a plurality of groups divided along axial direction of said first flame stabilizing zone.

Claim 27 (new): A burner according to claim 25, wherein said second auxiliary combustible gas flame hole comprises second auxiliary combustible gas flame hole in a plurality of groups divided along the axial direction of said second flame stabilizing zone.

Claim 28 (new): A burner according to claim 25, wherein said first and second flame stabilizing zones and said combustion chambers are of a cylindrical shape and have substantially same diameter.

Claim 29 (new): A burner according to claim 25, wherein a pipe or a hole for directly viewing combustion flames is disposed upstream of the combustion flames in said flame stabilizing zone or said combustion chamber and a UV sensor is provided for detecting the combustion flames through said pipe or said hole.

Claim 30 (new): A burner according to claim 17, wherein a mixer positioned outside of a supply unit for the auxiliary combustible agent is provided for mixing an oxygen-containing gas from an oxygen-containing gas supply line and a fuel gas from a fuel gas supply line, and supplying the gases to said combustion chamber, in which the supplied gases are combusted to produce combustion flames.

Claim 31 (new): A burner according to claim 17, wherein a flow speed accelerating means is disposed in said waste gas chamber for increasing flow speed of a combustible waste gas to a level equal to or higher than combustion speed of the combustible waste gas.